

WHAT IS CLAIMED IS:

1 1. A data transmission system comprising:
2 a first plurality of Gigabit Ethernet input/output ports,
3 each port adapted to be coupled to a first Gigabit Ethernet link
4 carrying data packets;
5 a multiplexer interface coupled to said first input/output
6 ports;
7 a multiplexer coupled to said multiplexer interface, said
8 data packets;
9 a transmitter coupled to said multiplexer; and
10 an optical link coupled to said transmitter;
11 wherein said multiplexer interface comprises a first
12 optical transceiver adapted to detect a first loss of signal in
13 said first Gigabit Ethernet links and generate a signal loss
14 code insert; and
15 wherein said multiplexer is adapted to multiplex said
16 signal loss code insert with said data packets.

1 2. The system of claim 1, further comprising:
2 a receiver coupled to said optical link;
3 a demultiplexer coupled to said receiver; and
4 a demultiplexer interface coupled to said demultiplexer,
5 wherein said demultiplexer comprises a plurality of second

6 optical transceivers that are each adapted to be coupled to a
7 plurality of second Gigabit Ethernet links;

8 wherein said demultiplexer interface is adapted to receive
9 said signal loss code insert and in response, prevent at least
10 one of said second optical transceivers from transmitting light.

1 3. The system of claim 2, further comprising a photo-
2 detector circuit coupled to said demultiplexer;

3 wherein said photo-detector circuit is adapted to detect a
4 second loss of signal in said optical link and in response,
5 generate a deactivate signal and transmit the deactivate signal
6 to said second optical transceivers.

1 4. The system of claim 2, wherein said second optical
2 transceivers comprise a PHY chip, and wherein said PHY chip is
3 adapted to detect a third loss of signal in one of said second
4 Gigabit Ethernet links and go into an auto-negotiation stage.

1 5. The system of claim 1, wherein said signal loss code
2 insert is bit multiplexed with said data packets.

1 6. The system of claim 1, wherein said multiplexer is
2 adapted to multiplex on a bit by bit basis.

3 7. A method of detecting fiber faults in a data
4 transmission system, said method comprising:
5 receiving a plurality of data packets carried on a
6 plurality of first Gigabit Ethernet links at a first plurality
7 of Gigabit Ethernet input/output ports;
8 multiplexing, said data packets onto an optical link;
9 detecting a first loss of signal in said first Gigabit
10 Ethernet links and generating a signal loss code insert; and
11 multiplexing said signal loss code insert with said data
12 packets.

1 8. The method of claim 6, said optical link coupled to a
2 demultiplexer, said demultiplexer comprising a plurality of
3 second optical transceivers that are each adapted to be coupled
4 to a plurality of second Gigabit Ethernet links, said method
5 further comprising:
6 receiving said signal loss code insert; and
7 preventing at least one of said second optical transceivers
8 from transmitting light in response to said signal loss code
9 insert.

1 9. The method of claim 7, wherein a photo-detector circuit
2 is coupled to said demultiplexer, said method further
3 comprising:

4 detecting a second loss of signal in said optical link;
5 generating a deactivate signal in response to said second
6 loss of signal; and
7 transmitting the deactivate signal to said second optical
8 transceivers.

10. The method of claim 7, wherein said second optical
transceivers comprise a PHY chip, said method further comprising
detecting a third loss of signal in one of said second
4 Gigabit Ethernet links; and
5 entering into an auto-negotiation stage.

11. The method of claim 6, further comprising:
bit multiplexing said signal loss code insert with said
data packets.

10 12. The method of claim 6, wherein the multiplexing is
accomplished on a bit by bit basis.